

Serial No. 10/562,228
Attorney Docket No. 095309.57265US

REMARKS

Favorable consideration and allowance are respectfully requested for claims 1-8 in view of the foregoing amendments and the following remarks.

Claim 2 is amended to replace the phrase "and/or" with more common patent lexicography.

The rejection of claims 1-8 under 35 U.S.C. 112, second paragraph, as indefinite, is respectfully traversed.

Claim 1 is amended to recite "an exhaust-gas-side surface of the catalytically active coating", rather than "the exhaust . . ." Claim 6 depends from claim 1 and is amended to recite "the exhaust-gas side".

Claims 2-8 are amended to recite that they are directed to the system of claim 1 rather than the "apparatus."

Claim 7 is amended as kindly suggested in the Office Action to reflect that the gradient may be in either or both of the first and second regions as well as a diffusion layer.

With respect to the term "exhaust-gas-side" this term is used to modify the surface of the catalytically active coating that has the diffusion layer. Thus, the term tells the reader the location of the diffusion layer with reference to the catalytically active coating – thus, the diffusion layer is on the side of the coating that is exposed to the exhaust. The actual location of the diffusion layer is the "intake region" is defined in the latter portion of claim 1. This tells the skilled artisan the location of the coating with reference to the overall system.

Accordingly, the claims do not suffer from an antecedent basis problems and reconsideration and withdrawal of this rejection are respectfully requested.

The rejection of claims 1-8 are under 35 U.S.C. 103(a) as obvious over Dalla Betta, et al. (US 5,258,349) in view of Brueck (US 5,506,028) and Carmello, et al. (US 5,841,009) is respectfully traversed.

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Claim 1 is amended to recite that the catalytically active coating is applied onto a support body material of the catalytically active component, from an intake region to a discharge region of the catalytically active component, in the form of a gradient so that

the first region of the catalytically active coating predominates in the intake region of the catalytically active component; and

the second region of the catalytically active coating predominates in the discharge region of the catalytically active component. Support for this amendment may be found in the specification, for instance in paragraph [0007] on page 2.

Neither Dalla Betta nor Carmello disclose a catalyst configured according to the presently claimed invention. It is also important to consider that high activity and low light-off temperature are different features and that they are not necessarily comparable or interchangeable. Activity is related to reaction rate, whereas the light-off temperature is the temperature at which a certain percentage, normally 50 %, of a maximum conversion is reached when heating-up the catalyst. Thus, one catalyst with a lower light-off temperature than another catalyst exhibits a higher activity than the other catalyst temperatures around the light-off temperature - but not necessarily at high temperatures.

Though similar to a high activity, a low light-off temperature may be achieved by a high precious metal concentration. However, the light-off temperature is influenced by many other chemical or physical material properties, e.g., activation energy, precious metal dispersion, specific surface area, etc.

Moreover, even if high catalytic activity could be equated with low light-off temperature, Dalla Betta would not lead to claim 1 as outlined above. In particular, Dalla Betta teaches coating an intake region with a coating having a higher activity (e.g. achieved by higher concentration of catalytic metal), which would lead to a lower light-off temperature, when following the preceding

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assumption.

Though Carmello mentions that activity profiles with increasing activity in the direction of flow were known (col. 1, line 46-48), similar to Dalla Betta the catalyst proposed by Carmello exhibits a first layer (intake region) of high activity followed by a second layer of low activity (col. 2, line 14-18). Thus, with respect to the light-off temperature Carmello also does not suggest a catalyst arrangement such as that contemplated according to the present invention.

Furthermore, a high activity will necessarily lead to a high heat release and therefore to high reaction temperatures. Thus, a catalyst region having a high activity would naturally require a high heat resistance. Assuming that a high activity corresponds to a low light-off temperature, then a region exhibiting this low light-off temperature should have also a high temperature resistance. However, in the invention as outlined above, a coating region with a low light-off temperature has a reduced temperature resistance and a coating region with a high light-off temperature has a high temperature resistance. Thus, Dalla Betta as well as Carmello actually teach away from the invention, since, according to these references, in the respective intake regions the catalysts exhibit a higher activity than in the following (secondary or discharge) region.

With respect to the diffusion layer, Dalla Betta teaches to apply the diffusion layer on the downstream portion rather than the intake region. Thus, Dalla Betta does not disclose or suggest the arrangement as claimed.

The Brueck document concerns metallic catalyst supports, possibly having a cone shape, however this reference does not discuss the configuration of catalyst coatings and does not make up for the deficiencies of the other cited references in this regard.

Based on the foregoing, the claimed invention is distinguishable from the teachings of the various cited references. As a result of these differences, the claims are submitted to be allowable over the cited references and

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reconsideration and withdrawal of the rejection are respectfully requested.

CONCLUSION

In view of the foregoing, the application is respectfully submitted to be in condition for allowance, and prompt favorable action thereon is earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket No. 095309.57265US).

Respectfully submitted,

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